

Cyber-physical Systems Institute			Semester 2. of the curriculum 2025-26-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Modern computer architectures	NKXKSAEBNF	5	full-time	2	0	0
Responsible person for the subject: Prof. Dr. Dezső SIMA			Classification: professor emeritus			
Subject lecturer(s): Zsolt BRINGYE						
Prerequisites:	NKXSA1EBNF	Introduction to Computer Architectures				
Way of the assessment:	exam					
Course description						
Goal:	The aim of the course is to familiarize students with the current processor portfolio, key concepts, cause-and-effect relationships, and emerging trends. The presentation of concrete implementation examples helps students understand the course material.					
Course description:	An overview of the evolution of the Intel Core 2 family in the areas of client, HEDT, server, and mobile processors. The concept and development of AMD Zen-based architectures. The Arm ISA and the evolution of implemented Armv8/v9-based processors. The main methods of managing power dissipation at circuit, processor, and system levels, including Turbo Boost techniques. The evolution of mobile processor microarchitectures, including symmetric multicore, big.LITTLE, and DynamIQ processor architectures. The development of multi-core dual-socket server processors and the main issues in server processor implementation. Arm ISA-based client and server processors.					

Lecture schedule	
Education week	Topic
1.	Overview of the Intel Core 2 processor family
2.	Overview of the Intel Core 2 processor family
3.	Overview of the AMD Zen processor family
4.	Overview of the AMD Zen processor family
5.	Overview of the ARM Cortex-A processor family
6.	Power dissipation management in processors
7.	Power dissipation management in processors
8.	academic break
9.	Evolution of client processor platforms
10.	Mobile revolution
11.	Mobile revolution
12.	Dual-socket (2S) server processors
13.	Dual-socket (2S) server processors
14.	ARM ISA-based server processors
Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	n.a.
Assessment schedule	

Education week	Topic													
Method used to calculate the <i>mid-term grade</i> (to be filled out only for subjects with mid-term grades)														
-														
Type of the replacement														
Type of the replacement of written test/mid-term grade/signature														
Type of the exam (to be filled out only for subjects with exams)														
Written Exam														
Calculation of the exam mark (to be filled only for subjects with exams)														
The exam mark is determined on the basis of the written exam result														
Final grade calculation methods:														
The final grade will be calculated using the following scale:														
	<table border="1"> <thead> <tr> <th>Achieved result</th> <th>Grade</th> </tr> </thead> <tbody> <tr> <td>87% - 100%</td> <td>excellent (5)</td> </tr> <tr> <td>75%- 86%</td> <td>good (4)</td> </tr> <tr> <td>64% -74%</td> <td>satisfactory (3)</td> </tr> <tr> <td>51% - 63%</td> <td>pass (2)</td> </tr> <tr> <td>0 - 50 %</td> <td>failed (1)</td> </tr> </tbody> </table>	Achieved result	Grade	87% - 100%	excellent (5)	75%- 86%	good (4)	64% -74%	satisfactory (3)	51% - 63%	pass (2)	0 - 50 %	failed (1)	
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51% - 63%	pass (2)													
0 - 50 %	failed (1)													
References														
Obligatory:	Class materials published in Moodle													
Recommended:														
Other references:														